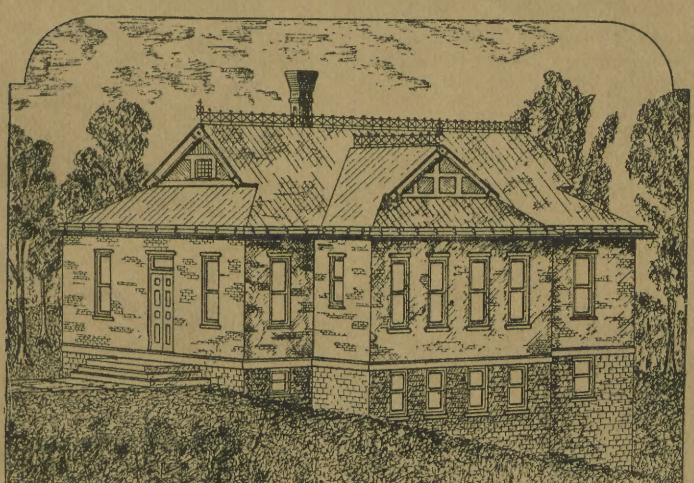
THE

MOST APPROVED EUROPEAN METHODS

OF USING SULPHUR WATER AT

SHARON SPRINGS, N. Y.

INHALATION, PULVERIZATION, DOUCHES, ETC.



FOR TREATMENT

OF

NASAL CATARRH

AND

DISEASES OF THE RESPIRATORY ORGANS.

By Gardner (J. H.) & Sons

INTRODUCTION OF THE

MOST APPROVED EUROPEAN METHODS

OF USING SULPHUR WATER AT

SHARON SPRINGS, N. Y.

FOR TREATMENT

OF

NASAL CATARRH,

PULMONARY TUBERCULOSIS,

AND

DISEASES OF THE RESPIRATORY ORGANS

WITH TRANSLATIONS

FROM THE NOTES OF FRENCH PHYSICIANS ON THESE METHODS AND THE RESULTS, AS OBSERVED IN FRANCE

NEW-YORK
PRESS OF THEO. L. DE VINNE & CO.
1888.

"Above all things, it appears to me necessary to show that the treatment of diseases and morbid tendencies by waters and climate is only a branch of general medicine, that it rests on the same principles, and ought to go hand in hand with other measures of sound practice."

HERMANN WEBER, M. D., F. R. C. P.
London.

"Of extraordinary value in various rheumatic conditions. *First*, of great service in the way of removing the thickness and stiffness which so often remain after attacks of rheumatism—a stiffness due partly to changes within the joint, but mainly to thickening of the fibrous tissues around the articulation. *Second*, in cases of chronic rheumatism, where a slow inflammatory action is going on in and around the joints, it suffices both to remove the inflammatory products and to diminish the tendency to rheumatic inflammation. *Third*, in rheumatic affections of the muscles, fasciæ, and nerve sheaths, it affords in many cases the most decided and speedy relief. *Fourth*, in the wasting of muscles, which so often occurs in connection with rheumatic processes, the manipulation and shampooing, along with the electrical stimulation which the doctors superadd, generally prove distinctly serviceable."

GRAINGER STEWART, M. D.
Edinburgh.

"For the cure of a chronic cold, and the eradication or diminution of the tendency to take cold."

LENNOX BROWNE, M. D.
London.

"Steam inhalations are probably more useful than any other class of local remedies that can be applied by the patient himself. They are of the greatest service in all acute inflammatory affections of the throat, and also in most chronic affections of that organ."

MORELL MACKENZIE, M. D.
London.

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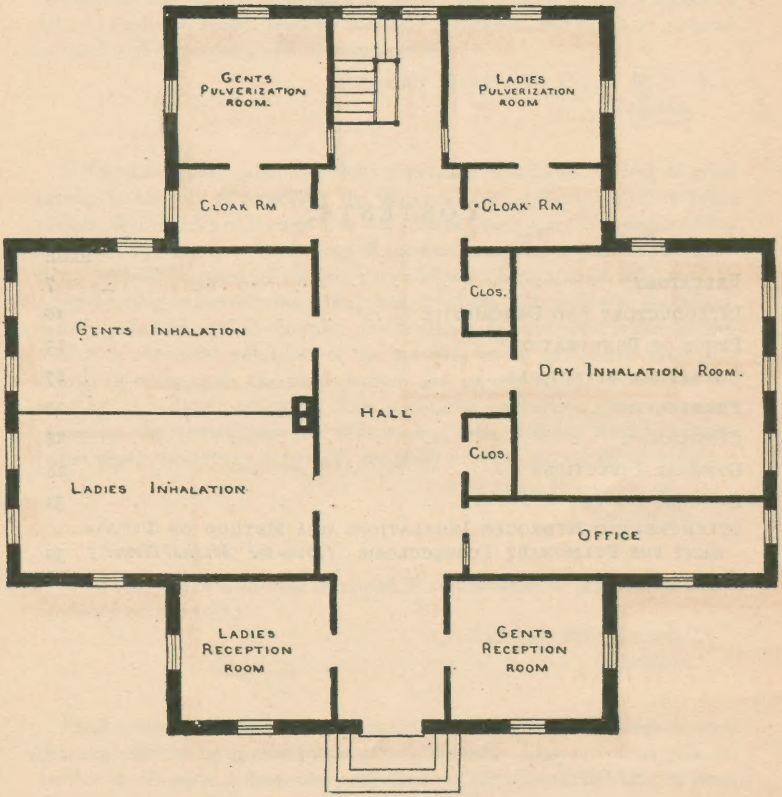

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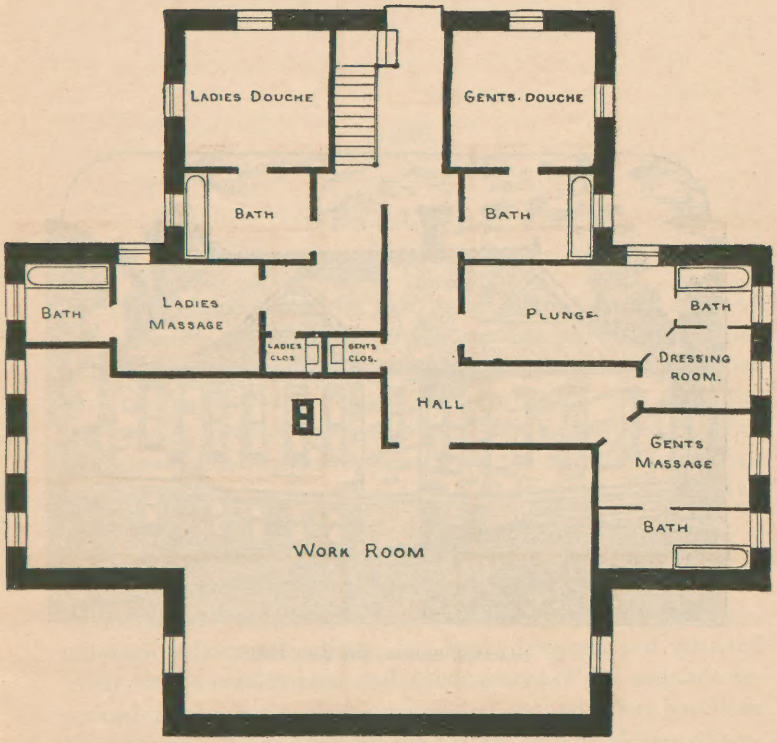
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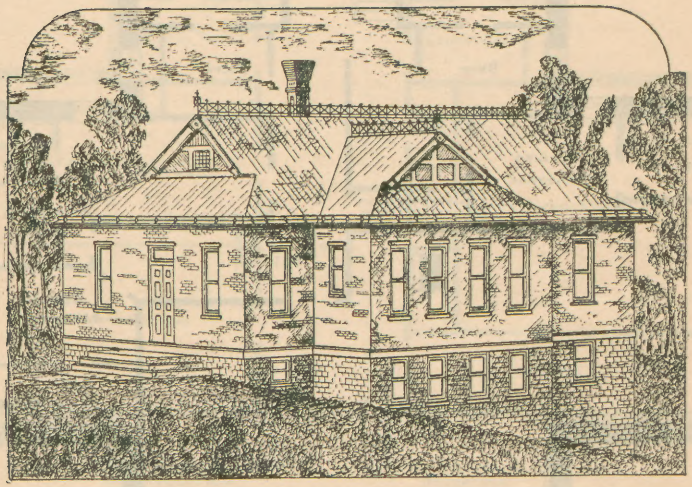

INHALATION BUILDING, OPEN JUNE, 1888.

1888.

PREFATORY.

THIS little pamphlet was first issued in 1885, in the hope of directing the attention of the medical profession and the public to certain applications of Natural Sulphur Water that have been employed in Europe for many years. The introduction of these methods at Sharon Springs, N. Y., has been followed by so gratifying success, evidenced by the annually increasing numbers of patrons, that it has become necessary to enlarge the facilities in this branch.

Since the close of the last season, a new building has been erected which will be opened to the public in June, 1888. This edifice, which is entirely distinct from the original bath buildings, although adjacent to them, has been designed and planned solely for the employment and development of the methods described in the body of this pamphlet, and no effort has been spared to give the applications the highest possible degree of perfection, and to make the surroundings agreeable, attractive, and cheerful. The structure is built substantially, of stone and brick, and is finished inside in hard woods; it consists of one story and a basement. On the main floor are reception rooms, inhalation rooms for direct application, pulverization rooms, one of each for each sex, and a dry or gas-inhalation room with a fountain of Sulphur Water in the center. A hall, twelve feet wide and twenty

feet high, through the middle of the building, gives access to the various rooms, and insures adequate ventilation; all the apartments are large and airy. The general plan of the establishment being in the form of a Greek cross, an abundance of light is secured in all parts. In the basement are bath-rooms communicating with retiring rooms for repose, or treatment by massage; ladies' douche room with bath-room attached; men's douche room similarly arranged, and a plunge bath with bath-room adjoining.

The proprietors are aware that this establishment, in size, in completeness, and variety of applications, may be somewhat in advance of the requirements of the moment, but basing their opinion on the experience of both profession and laity in other lands, they firmly believe that these methods, so thoroughly adopted and so highly esteemed abroad, are destined, in this country, to assume a commensurate importance in balneatherapy, a science which has been strangely neglected in the United States. It is a curious fact, that while at Aix-les-Bains, the great Sulphur Spring in France, 1500 or 2000 persons daily, during the season, avail themselves of the *douche* (which is the specialty of that resort), this particular method, *the general douche*, was not demanded by a single visitor at SHARON SPRINGS during the past summer. Discouraging as this might seem, the conviction cannot be any the less certain that the *Sulphur Water Douche*, fostered and developed at Aix-les-Bains by the French government, and annually used by thousands of invalids from all Europe, the Queen of England among others, must have merit and an acknowledged position in therapeutics in Europe, and consequently a similar application *should* have, and *will* have a corresponding success in this country, when tried, and known, and intelligently administered here. Therefore, as before mentioned, *douche* rooms have been equipped in this new building, in confidence that sooner or later the value of this application will be recognized.

In Europe many of the springs and baths are owned by the respective governments, and generous appropriations from the public funds have been expended upon them; all receive either

the physical or moral support of the State. Here each individual owner is dependent upon his own resources, and his efforts toward improvement are too often without even the appreciative acknowledgment of the medical profession, his natural ally. Happily, within the last few years the attention of physicians has been turned toward balnealogy in the United States. Eminent practitioners are making a study and a specialty of the "science of the method and of the operation of cures by means of baths and springs." The American Climatological Association, numbering among its members some of the foremost physicians in the land, is fostering this growing interest in the subject. To this association, and to other individual workers in the same direction, will be due the thanks of countless invalids who may yet find cure or alleviation by intelligent employment of natural mineral waters.

JOHN H. GARDNER & SONS.

SHARON SPRINGS, N. Y., March, 1888.

INTRODUCTORY AND DESCRIPTIVE.

IN the autumn of 1883, our attention was attracted by a paragraph in the society news of the "London World," in which it was stated that "many of the actors, actresses, and singers of France annually visit Aix-les-Bains for the benefit of their throats in the INHALATION ROOMS." The statement made a forcible impression upon us, for the reason that the persons referred to are those who cannot venture to trifle with the throat because their professional success, and, indeed, their livelihood, are dependent upon the healthful condition of this organ, and therefore we inferred that there must be something substantially good in this method of applying a natural Sulphur Water. It seemed to us that, if European experience had apparently demonstrated the utility of Sulphur Water in Catarrh and various diseases of the respiratory organs, the subject was worthy of investigation; and we felt that, if inquiry and examination should confirm the alleged value of the treatment, we should benefit both ourselves and the public by introducing the system into this country, and thus enlarge the scope and usefulness of Sulphur Water. For if, in addition to the diseases for which this mineral water has always been esteemed on this continent, it could also be so applied as to prove beneficial in Catarrhal and Bronchial difficulties, it would certainly be most desirable to place such methods

within the reach of those sufferers who might not be able to devote either the time or the money required to seek relief in other lands.

Influenced by these considerations, a member of our firm forthwith visited Europe for the express purpose of making the necessary inquiries. He found that at almost every Sulphur Spring in France apartments are provided for the use of the water by inhalation and pulverization. The scale upon which this has been done, the evident expenditure involved in perfecting the system, and the numbers who availed themselves of the treatment, all indicated a confidence in the intrinsic value of these methods of therapeutics that could not be ignored.

Accepting this indubitable evidence of popular faith in the Sulphur Water Inhalation as the result of its established efficacy (as proven after an experience in its use in Europe during a period of twenty-five years), we reasoned that the same system ought to prove valuable if carefully developed in the United States; and therefore we have equipped in our Sulphur-bath houses at Sharon Springs, N. Y., apartments devoted to Inhalation and Pulverization. In the choice of methods we enjoyed the valuable assistance of Dr. Blanc, Government Inspector of the Sulphur Baths at Aix-les-Bains, Savoy, France, whom we consulted in Paris; and we have selected those which have received the highest approval of the first bath physicians in Europe. In France there are three methods employed, viz.: inhalation of water atomized by steam; inhalation of water atomized by compressed air; and inhalation simply of the natural gases mechanically eliminated from the mineral water. Each of these has its advocates; we have introduced all three systems into our establishment, so that the invalid can exercise his own or his physician's judgment in selecting that which is best adapted to his case.

We have in operation three rooms: "Dry Inhalation," "Pulverization," and "Inhalation."

The "Dry, or Gas Inhalation," is the mode followed at Allevard, Savoy, France, where there are seven large rooms devoted to this system, which are patronized by from 300 to 400

invalids daily during the season. In this room the Sulphur Water, at the natural temperature of the spring, is discharged from a small jet against the concave surface of a glass cylinder, whence it drops into a shallow basin, from which it drips into several basins successively larger as they approach the floor. By this method the water is exposed to the surrounding air in drops, thus quickly eliminating its gases, and the room, which is kept closed, is filled with disengaged gas. Into this room, and the air thus charged, the invalid enters, without change of clothing, and remains, breathing the naturally medicated air, for such length of time as a physician may prescribe. This method is also in use at Marlioz, near Aix-les-Bains, and patients avail themselves of it in connection with the baths at the latter place. These gas inhalations at the places named are highly esteemed, and are administered with great success in various difficulties of the respiratory organs.

The "PULVERIZATION ROOM" is an apartment where the pure Sulphur Water is atomized by steam or by compressed air, or by both, after the fashion of the most scientific small steam atomizers, or air-compressors. The air of this room becomes saturated with the pulverized Sulphur Water, like a fog or mist, and invalids, upon entering, protect their clothing with a rubber cloak and hood. The application is moist, instead of dry, as in the other room. This method is employed at almost every European Sulphur Spring, and more particularly at those where the water is not highly charged with gas. It is efficacious in the various catarrhal disturbances of the throat, nose, etc.

The "INHALATION ROOM" is a chamber in which the Sulphur Water is atomized either by compressed air or by steam, for direct application to the throat or nose, without saturating the air of the room. Small rubber tubes carry the air to small tables in various parts of the apartment. These tables are provided with standards to hold the ends of the tubes, into which are inserted glass atomizers. The invalid sits in front of a table, with a glass face-shield in hand; the attendant turns a cock, and Sulphur Water, Pine Needle Extract and Sulphur Water, or any

desired combination with Sulphur Water, is applied in an atomized state directly to the affected part.

We have also in readiness various kinds of DOUCHES, much esteemed abroad, by means of which the Sulphur Water may be applied, in solid stream or shower, to any part of the body. The DOUCHES are of three kinds: *ascending*, *descending*, and *lateral*, and their temperature may be *cold*, *tepid*, or *hot*, at the option of the bather.

In addition, we have fitted up, in communication with some of the ordinary tub bath-rooms, private dressing-rooms furnished with a comfortable bed, on which the bather may repose immediately after the bath, and thus, without risk of catching cold, secure that profuse perspiration which is essential in the treatment of certain diseases.

The first introduction into the United States of these scientific applications of *Natural* Sulphur Water was made by us in our Sulphur-bath houses in 1884, and it met with unqualified success. In Europe, the general confidence in these various methods of treatment is evinced by the increased facilities that are constantly being made for their employment. They have the merit of rendering the Sulphur Water accessible (in the ordinary complaints for which it is sought) to those who, from various complications and causes, cannot avail themselves of it in the tub bath, as many such can, with perfect security and great advantage, use the Pulverization or Inhalation process. But particular attention is directed to the fact that they offer relief or cure in the various Catarrhal diseases, and complications arising therefrom, that are so prevalent in the United States. Of their ultimate success here, assured as it is abroad, we have no doubt. In thus adopting and developing these scientific methods of using Sulphur Water, we purpose to establish the fact that no person need cross the sea to obtain any application of a natural Sulphur Water because it cannot be found at Sharon Springs.

Although these methods are now attracting the attention of physicians in this country, there is, owing to their very recent introduction here, but little American literature bearing directly

upon the subject.* The notes and observations of French physicians on the treatment and its results are voluminous; from them we have made certain selections, which we have roughly translated, and which we offer herewith in the hope that they may prove both interesting and valuable to those persons who may desire to avail themselves of the applications described.

JOHN H. GARDNER & SONS,

Sharon Springs, N. Y.

* We are pleased to note that, in a work entitled "NASAL CATARRH AND ALLIED DISEASES," by BEVERLEY ROBINSON, A. M., M. D. (second edition, Wm. Wood & Co., 1885), commendatory allusion is made to the employment of these applications and to their value in certain catarrhal difficulties.

OPEN FROM JUNE TO OCTOBER.

[*From the French.*]

PROOF OF PENETRATION.

THE penetration of solid dusts into the lungs is above all remarkable when it is favored by certain, well-understood conditions. While in the normal state, the ordinary condition of the respiratory functions, pulverable bodies can only pass the orifice of the glottis in insignificant quantities; with workmen who have the habit of speaking loud, of singing, of shouting, of breathing noisily, the introduction of dust into the lungs is much more to be dreaded. It is the same with pulverized liquids which, with certain precautions well defined, easily penetrate into the trachea and bronchial tubes, as my affirmative experience demonstrates. We will mention the most conclusive experiments:

1. M. Réveil subjected, during ten minutes, a rabbit to the action of a solution of perchloride of iron pulverized, the mouth of the animal being held open with pincers. The rabbit was killed, and with a solution of ferro-cyanide of potassium, a blue discoloration was observed in the larynx, the trachea, and the bronchial tubes. The same experiment was made with a filtered solution of starch, and, by means of iodine water slightly acidulated, a blue tinge was traced to the uttermost ramifications of the bronchial tubes. It is known that the solution of starch cannot

be absorbed, and the objection that could be made to ferro-cyanide cannot apply to this starchy liquid, which penetrates directly into the air passages.

2. M. Demarquay caused an inmate of the Beaujon Hospital, who had submitted to tracheotomy, and wore a canula, to breathe powdered tannin; a paper of perchloride of iron introduced into the trachea, hermetically closed, soon became black after several inspirations of the patient who was experimented upon.

3. Dr. Tavernier, assisted by Dr. Gratiolet, inhaled two atomized liquids supplied by apparatus containing, one the acid solution of persulphate of iron, the other a solution of ferro-cyanide of potassium. By means of the laryngoscope he proved that the part of the larynx on both sides of the vocal cords was covered with Prussian blue.

Experience so positive and so conclusive cannot leave the least doubt in the mind, and we must regard the fact of the penetration of atomized liquids into the bronchial tubes as acquired for science.

[*From the French.*]

CATARRHAL AFFECTIONS.

THE sympathetic action that is exerted between the skin and the mucous membranes deserves most serious consideration on the part of the physician, because it plays a rôle of the first importance in the production of the diseases of these membranes, as well as in their development, and in the method of treatment that is applicable to them.

Why should it not be thus, since the mucous membranes are only, so to speak, the continuation of the cutaneous organ reflected in all the cavities which open on the surface of the body, and which are lined by the mucous membranes in their entire length?

When that portion of the cutaneous organism which forms the exterior surface of the body ceases to perform its functions, or when it is only modified in its physiological state, under the influence of cold, for example, that which lines the cavities of the body becomes sympathetically more active; its capillary blood system passes into a state of turgescence, which, if prolonged, degenerates into a veritable inflammation. It is thus that the chilling of the skin, the suppression of perspiration, very promptly cause inflammation of the mucous membranes.

Of all these membranes, none is found to be more influenced than that of the air passages by the changes to which the skin is exposed. Who does not know that *Coryza*, *Pharyngitis*, and *Bronchitis* are the most ordinary effects of chilling the skin? The sympathy, which gives rise to this reaction of the skin resulting in the production of local inflammation of the mucous membranes, is also found acting in an analogous manner when one applies to this exterior covering of the body any substance which changes its physiological action. It is thus that every irritation of the skin caused by the application of a revulsive tends to diminish to a certain extent the inflammatory state of the mucous membranes, and particularly of the pulmonary mucous membrane, which, observation has taught us, corresponds most directly with the skin.

Why, then, can we not understand that the thermal use of Sulphur Waters, a treatment which exercises so powerful an effect upon the skin, may have a similar effect on the pulmonary mucous membrane? This particular membrane, independently of the fact already demonstrated that it is more sympathetic with the skin than other analogous membranes, is also more directly influenced by the sulphurous vapors which invalids breathe during the thermal treatment.

Catarrhal affections of the mucous membranes rarely constitute simple morbid conditions; they are often connected with complex constitutional diseases; but whatever may be their nature, — *rheumatic*, *scrofulous*, or *herpetic*, — the sulphurous treatment is equally indicated; only the method varies. *Rheumatic catarrh*, *muco-albuminous catarrh*, *puriform with swelling of the mucous membrane*, *granular from scrofula*, *erythematic inflammatory catarrh*, — all derive benefit from Sulphur Waters. Hence it is of great importance that the physician should ascertain what has been the cause of the catarrhal affection, and what its nature is. This examination should be considered most imperative; and I have often had cause to congratulate myself that, on the arrival of each invalid at the establishment, I have not failed to make a minute inquiry into his previous life and actions. I inquire as to former habits, the diseases he has suf-

fered from, the kind of work that he has done, and the physiological antecedents of his family. It is seldom that this examination, renewed several times, does not give me the clew to the principal cause, which, without this, would be unknown to me. Once understanding the cause, and the temperament and constitution of the invalid, I prescribe the treatment that should be followed.

Chronic catarrhal affections may be allied to three principal predisposing causes: *rheumatic*, *scrofulous*, and *herpetic* diathesis, each giving rise to different and characteristic expectoration; thus, *rheumatic* catarrh produces a sero-mucous secretion, which follows violent coughing, and becomes humid only at the end of the cough. Catarrh arising from, or connected with, *scrofula*, causes a secretion muco-albuminous and puriform, with granular swelling of the glands, which is characteristic of *scrofula*, and is observed in *granular pharyngitis.*

Catarrh due to *herpetic* diathesis is distinguished by a dry inflammation of the mucous membrane, or sometimes by inflammation of the follicles of the mucous membrane, accompanied by a glairy secretion. In these different catarrhs the indication of Sulphur Waters is the same, and herein is their special utility, their veritable triumph, only the mode of administration varies, as we shall see.

"Rheumatic pulmonary catarrh," says M. Astrée, "can be treated with advantage in various thermal establishments where rheumatism is cured, whatever may be the nature of the water; but success will be more certain and more rapid by using a Sulphur Water, on account of the *hypercrinique* effect, entirely special, of the sulphur on the skin and the bronchial mucous membrane." The double action, stimulating and alterative, of Sulphur Water makes it, to a certain degree, a physiological and therapeutical specific, which acts both on the surface of the skin and on all the mucous membranes, not only during the thermal treatment, but for a long time after one has ceased to use the baths, douches, inhalations, etc. Thus, to combat this form of catarrh, the water should be taken internally by drinking, and the baths should be warm; the baths and douches, by provoking a

strong diversion on the skin, and by causing abundant perspiration, will displace the inflammation; and if this derivative treatment is accompanied by prolonged sojourn in the inhalation room, where the vapors act directly on the diseased mucous membrane, we readily perceive that very good results must follow.

Chronic catarrh, due to a *scrofulous* diathesis, requires a different treatment. The baths should be more prolonged and the douches frequent, without being followed by profuse perspiration. The invalid should sojourn, by preference, in the gas inhalation room. In these cases of *granular pharyngitis*, the invalid finds benefit in the use of tepid douches at first, and afterward of cold ones, applied directly on the pharyngeal mucous membrane. The action of these direct local douches is aided by the diversion which is produced by warm douches administered on the nape of the neck and around the neck. This treatment has the effect of diminishing the granulations, and then the swelling of the mucous membrane. For this the thermal treatment requires at least a sojourn of one month at the Springs. These injections succeed equally well with children suffering from *chronic pharyngitis* with enlargement of the tonsils. Every year we have a large number of these children, who are rapidly cured under the influence of this treatment. *Chronic pulmonary catarrh*, with herpetic diathesis, is much more frequent than is ordinarily supposed. How often I have seen *eczema*, *psoriasis*, *impetigo*, even *lichen*, appear unexpectedly on invalids when the thermal treatment has brought out a strong eruption. Questioned by me, they then admit that they have had, at some time, something on the skin which has disappeared; and thus in recalling the fact they remember that their cough dated from the disappearance of the *exanthema*.

In reading the numerous observations that I have collected, I am astonished at the frequent alternation of eruptions and catarrhs. These catarrhs are usually accompanied by a very abundant viscid secretion, strongly resembling a solution of gum-arabic, and following a dry, painful cough attended by frequent *dyspnœa*. In these cases, the follicles only of the mucous mem-

brane, which assumes the color of wine, are enlarged. It is in the nasal fossæ, the pharynx, the mouth, when the mucous membrane of these parts is attacked, that we can see this color and this hypertrophy, which are, for me, with the gummy secretion, the true characteristics of this catarrhal affection. These facts have led me to admit that, as the skin is the seat of dartrous and herpetic affections, so the mucous membranes may also be attacked in the same manner. Moreover, do we not often see on the surface of the body humid or dry eruptions existing at the same time that the invalids are complaining of dry coughs, dry asthmas, dry heats, and sensations of aridity in the breast? All these phenomena indicate, in the most positive manner, that herpetic affection may exist in the bronchial mucous membrane the same as it is seen on the cutaneous surface. Is it not in these cases that Sulphur Water, so powerful against cutaneous diseases, should be considered as a veritable specific, that acts upon the skin by the baths, and on the pulmonary mucous membrane by the inhalation of the sulphurous vapors and the other alterative principles carried in these vapors, which are absorbed by the mucous membrane, and pass rapidly into the circulation after having exercised upon that membrane a real topical effect? Bronchorrhœa, an affection essentially chronic, is most frequently connected with rheumatism and dartrous complaints.

Chronic catarrh is not always dependent upon a diathesis; it follows sometimes an acute inflammation which has left behind it an irritation of the mucous membrane with a too abundant secretion. This form of catarrh is still more easy to cure than the preceding.

[*From the French.*]

PHARYNGITIS.

PHARYNGITIS is a very common disease, and one against which medicine often fails to prevail; therefore, invalids seek the Sulphur Waters for a more efficacious medication. Why should they do otherwise, since we see this malady so often connected with herpetic diathesis, accompanying or following cutaneous diseases? The numerous cures that I have effected of this disease so rebellious, so refractory to medicine, justify me in mentioning here the method of treatment that I have so often employed with advantage.

In granular pharyngitis the mucous membrane takes the color of wine; it is swollen, and in spots its enlarged follicles raise up the surface, which then assumes an uneven and honey-combed appearance; the invalid experiences not only heat and smarting, but he has also a constant desire to expectorate, to rid himself of the glutinous secretions difficult to eliminate.

Drinking of the Sulphur Water is insufficient, but nevertheless it should not be neglected, because it has an alterative action, modifying the dartrous tendency, and, combined with the baths, gargarisms and douches, it should necessarily form a part of the sulphurous medication.

In fact, the bath prepares the cutaneous surface, modifies it, and corrects the secretions often perverted. The douche stimulates still more this organ, develops the capillary circulation, renders the secretions active, and causes a general movement, profound and complex; it impresses on the circulation the highest energy; it promotes an eliminatory perspiration.

But even this is not enough; we must join to it in the beginning the emollient and sedative action of the inhalations of the sulphuretted hydrogen combined with the vapors from the mineral water. All invalids suffering from pharyngitis experience during the sojourn in the inhalation room a great sense of comfort, which they express by saying that the inhalation of these vapors resembles a piece of velvet passed over the throat. After several days of this treatment, the mucous membrane becomes less sensitive, and the invalid can gargle first with tepid water, then with cold; and when the painful sensibility has disappeared, the patient receives, every morning and evening, directly on the pharynx, the throat douche, of which the force, temperature, and volume are regulated at will. The jet is very thin, weak, and tepid at first, but little by little the force and volume are increased and the temperature diminished. Under the influence of this treatment directed topically, the mucous membrane gradually loses its unhealthy discoloration, its surface becomes less wrinkled, the granulations disappear little by little, and the membrane becomes more smooth. The invalid then feels relief and comfort, and generally recovery is the result of this complex medication.

[*From the French.*]

CLINICAL.

SIMPLE PHARYNGITIS.

M. V—— of Lyons, aged twenty-seven years, of a sanguine temperament, of a strong constitution, never having had venereal disease, has frequently had throat troubles which he treated in the ordinary manner by medicine. He has suffered from trouble in the throat during the winter; this difficulty first appeared at the end of a violent *quinsy* that he contracted in the month of November, eighteen months ago, and which he neglected. He felt continually the necessity of swallowing his saliva, and of expectorating *mucus* difficult to detach from the throat. He was obliged constantly to clear his throat from these glutinous matters. On his arrival I observed an active congestion of the mucous membrane of the pharynx, with swelling. He was directed to use the water internally by drinking. He took eight baths of an hour's duration each, a foot-bath every evening, and then he passed to the use of the general douche at a temperature of 118° Fahr., of which the jet was directed from time to time on the nape of the neck and around the neck. These douches were followed by abundant perspirations. In the afternoon he passed three-quarters of an hour in the inhalation room, and during the

day he often gargled his throat. He took three douches and then a bath. After eighteen days of this medication the injection douches were given directly on the mucous membrane of the pharynx for twenty minutes at 72° Fahr. Each day the duration of the local douches was increased, while at the same time the temperature was lowered.

Under the influence of this treatment, the mucous membrane of the pharynx lost, little by little, its discoloration; the secretion from the follicles decreased, the patient no longer felt the imperative desire to expel *mucus*, the membrane became smoother, and after thirty-two days of treatment the invalid left the establishment with so great an amelioration that in six weeks afterward he was completely cured.

GRANULAR PHARYNGITIS.

M. D—— of Bourges came for granular pharyngitis, accompanied with swelling of the tonsils. The child appeared rather pale, its temperament was slightly lymphatic, and its constitution, without being strong, was not what it should be at this epoch of life. The use of the water by drinking was prescribed in doses of from one to three glasses per day. He frequently gargled the throat with Sulphur Water, tepid at first and then at a lower temperature, 61° Fahr. He was submitted to the use of the warm baths and to douches slightly warm, in order to render active the functions of the skin, which was not acting in a natural manner, and to impress upon his entire organization a profound modification. After twelve days of this medication the little invalid already experienced improvement. The mucous membrane was less red, the secretion from the pharynx more easy and less frequent. While continuing the same treatment, he spent forty minutes every morning in the inhalation room, and every afternoon while his legs were bathed he received on the mucous membrane of the pharynx a local douche, tepid at first and with a gentle jet, but of which the temperature was lowered each day progressively, while the volume and force were increased. This treatment was continued one month, after which the child

returned to his home with very evident improvement. The cure was complete two months afterward. The winter and spring passed without his suffering any relapse. His mother brought him back the next year, in order to make certain of his entire cure. On his arrival I found that the mucous membrane had resumed its form and natural appearance, and the tonsils had almost retaken their normal size.

CHRONIC BRONCHIAL CATARRH.

M. ——, a physician, of lymphatic temperament, of delicate constitution, aged thirty-six years, has had catarrhal fever. The cough has continued and increased during the winter, accompanied with abundant and thick expectoration. He has become thin and lost strength.

In the month of July he arrived, and followed a complete course of treatment, during which he used the cold gas inhalation conjointly with the other balneatory methods. He left with me his observations, which I transcribe here.

July 12.— During the first ten minutes in the inhalation room, bitterness in the mouth, slight styptic sensation in the pharynx, gentle heat in the interior of the chest, slight desire to cough, heaviness in the head, phenomena which disappeared little by little.

July 13.— Sojourn of half an hour; same phenomena as the day before; abundant expectoration with odor of sulphur.

July 14.— Sojourn of three-quarters of an hour; no trouble in the head; bitterness in mouth; sensation of gentle heat in the breast; expectoration abundant, with odor of sulphur; expectoration alkaline; presence of sulphur in expectoration.

July 15 and 16.— Sojourn of one hour; same phenomena; expectoration very abundant; cough a little dry.

July 17 and 18.— Same length of time in inhalation room; slight annoyance in breathing; sensation of internal heat; constricted feeling in throat; less expectoration, and less thick.

July 19 and 20.— Repose from all treatment; slight fever; appearance of an eruption in the form of *urticaria*.

July 21 and 22.— Less fever; eruption is developed; sojourn of half an hour only in the gas-inhalation room.

July 23 and 24.— Began again the thermal treatment; expectoration returns, but less thick; less annoyance in breathing; more fever.

July 25 and 26.— Inhalation of forty-five minutes, by séances of ten minutes each; less cough; less expectoration; sleep as well as appetite returns.

July 27, 28, 29.— Same phenomena.

From July 30 to August 16, the day of his departure, the cough continued to diminish, expectoration decreased and became acid; he found himself much improved.

"From this observation," says the doctor, "I conclude that the action of the sulphuretted hydrogen, when breathed, results in first causing a slight disturbance in the brain, which disappears very quickly, and after a few days does not return; that the inhalation of the gas produces a marked sedative effect on the pulmonary mucous membrane, a slight sensation of heat in the chest which causes a gentle stimulation that has the effect of modifying the chronic inflammation of the mucous membranes, and consequently the secretions they supply, and at last of curing them."

[*From the French.*]

GENERAL DIRECTIONS.

THE invalid seats himself before the table in front of the apparatus, and receives the pulverized mineral liquid on the diseased organ, nasal fossæ, eyes, mouth, throat. It is not possible to indicate general rules as to the method in which one should take the pulverization, as it varies with each invalid. It is for the physician to instruct the bather on the manual method, and to fix the duration of the inhalation process. While some invalids who wish to derive benefit from the atomized water for *chronic coryza*, *ulceration of the buccal mucous membrane*, or *pityriasis of the face*, can support the inhalation for a period comparatively long, those who would have the respiratory organs affected should content themselves with short séances; the pulverized water should not be inhaled before the apparatus during more than fifteen minutes, and then by several renewals of two or three minutes each. The duration that we fix does not apply evidently to the sojourn in the inhalation room, where one remains ordinarily three-quarters of an hour; it represents only the time that the pulverization should be practiced, which may be divided and separated by variable intervals of repose adapted to the patience and strength of the patient.

What are the conditions under which the subject should be placed who inhales the atomized water? What are the precautions that should be taken to facilitate the penetration of the pulverized liquid into the air passages? The invalid should breathe only through the mouth wide open, should carry the head forward, and project as much as he can the tongue below and outside; he will notably facilitate the introduction of the aqueous dust by raising the soft palate, and enlarging the space which separates the free margin of the epiglottis and arytæno-epiglottic folds of the posterior wall of the pharynx. If the subject breathes by the mouth and by the nose at the same time, the penetration of the atomized water will be imperfect, for then the nasal respiration prevents the soft palate from rising; the column of air rushes against this obstacle, and can only pass in part into the narrow space which separates the base of the tongue from the pharynx. As invalids generally find great difficulty in changing their ordinary habit and in breathing through the mouth only, we have had some idea of making an obturator, to prevent the passage of air into the nasal fossæ while the inhalation is being received.

In carrying the head forward, and in thrusting the tongue outside, one effaces the promontory formed by the base of the tongue, which becomes a groove slightly inclined downward and backward; the epiglottis is drawn forward, and to a certain degree the space is enlarged which separates the free edge of the epiglottis from the posterior wall of the pharynx. The atomized water, when it reaches the larynx, does not stop either on the superior vocal cords or on the anterior angle of the tongue; it passes the obstacle presented by the inferior vocal cords, which are slightly stretched and effaced in the position that the larynx has taken. The pulverized liquid thus penetrates into the trachea and bronchial tubes.

The invalid should always force himself to make profound and frequent inspirations. The introduction of the atomized water into the air passages will thus be facilitated. Besides, Piorry has demonstrated the utility and the beneficial power of great respiratory movements. This hygienic practice, these pulmonary

gymnastics, should, therefore, always be recommended to invalids who take the pulverization; their action will add to the local and general effect of the water.

The pulverized water, when it arrives in the air passages, has an action much more powerful, because it possesses that increase of curative activity that a minute division of medicinal substances ordinarily gives. The remedy being put in direct relation with the disease by the pulverization, a real topical treatment is established which is entirely analogous to the dressing of a wound; the atomized water acts as a balm on the ulcerated and on the inflamed part.

We never advise an invalid to go to the pulverization room immediately after leaving a warm bath; we suggest always that at least one hour should intervene between the two treatments.

Some persons bear the inhalation one hour, or two, the first day; others in beginning cannot remain in it five minutes; some ordinarily pass two or three hours each day in the apartment. Sulphuretted hydrogen would not be absorbed in large doses without inconvenience; it is at least useless to prolong it to toxical effect. I prescribe five minutes in the beginning, sometimes one or two; in order to apply usefully and surely the gas-inhalation, it is necessary to know that short séances often calm the cough, the agitation, the nervous state, the palpitation; that they cause the pulse to decrease; while in prolonging them one accelerates the circulation, brings back the pain, the irritation of the bronchial tubes, oppression and congestion.

[*From the French.*]

DOUCHES.

THE Douche is one of the forms under which mineral water is most often and most usefully employed. The method of its action is sometimes direct stimulation, sometimes revulsion; its power is in proportion to its volume, its temperature, the nature of the water, and the force of percussion determined by the height of its fall. It is employed as a direct stimulant in a large number of cases. Such are indolent enlargement of the glands, swellings of the articulate tissues where there are no more pain and no marked sensibility, chronic rheumatism fixed at some superficial determinate point. One can then attack them without fear, as we see it done for rheumatic pains in the head, which readily yield to douches on that part. But if the rheumatism is changeable, and above all, if it has a tendency to move toward the viscera, there would be danger of driving it within. It is then prudent to begin with the baths, and at a later period to employ the other means indicated. Directed on the vertebral column in all its length, the douche is wonderfully suited to young persons suffering from general debility, or more particularly from weakness of the lower members from incipient *tabes mesenterica*, or any other cause. Moreover, it is necessary to change lightly and successively the points of percussion, to expose turn by turn

the suffering parts, with precaution, always, never to apply the douche to that where too great sensibility is developed. Besides its direct stimulating action which is immediately transmitted to the stricken part, as we can see by the quick coloring of the skin, the douche can exercise, by reason of this same stimulation, a powerful reactionary effect. It is employed with advantage concurrently with half-baths and foot-baths in order to change the course of the blood, and to recall it to the extremities; then the douche is applied to the feet and legs. This method contributes powerfully to dissipate the habitual sensation of cold of which many pallid women complain, who are of feeble constitution, subject to internal concentrations and to irregular and suppressed menstruation. In this last difficulty the douche, alternately directed on the legs and on the loins, becomes one of the best methods of reëstablishing the epochs. Never should its action be carried directly on a parenchymatous organ too immediately adjacent to the skin, such as the liver, for example, or on a part where the concussion might fatigue or irritate, as the breast. If it is thought advisable to use it, it is then necessary to reduce its volume, its duration, and to advise that the shock be received only in an oblique line.

The duration of the douche should not be prolonged to the extent desired by many invalids, and as we sometimes see it employed; in general, fifteen or twenty minutes will be enough. Douches too long continued may end by provoking an intense, universal excitement, which may oblige one to interrupt the treatment, a thing always to be avoided. The peasants generally have a sufficiently strong organization; however, it often happens that this method of treatment fatigues them, and they cannot bear it. I have seen, for example, some of them obliged to abandon the douches because convulsive movements, for which they were trying them, had evidently been increased after two or three days of treatment. It is prudent, therefore,— experience demonstrates it,— not to pass the medium limit indicated, even when the douche is directed on parts distant from each other; since, in fact, it is always the same total of stimulation, bearing on the same organic whole.

The douche is generally taken before the bath, because in coming out of the latter it is not desirable to expose the uncovered body to the contact of the air. Occasionally, nevertheless, it is taken at the end of the bath, but without leaving the bath; then it should be received on the parts which are not immersed in the water, as the neck, for example, and those parts which might become chilled during the bath.

We vary at will the volume of the douche, governed by the susceptibility of the parts and of the invalid. Habitually, the jet is the size of the finger; it is easy to diminish it, either by partially closing the cock or by using spouts of smaller caliber, or even by substituting, if there is necessity, a watering-pot nozzle, from which the water issues like rain.

The ascending douches are used where it is requisite to reach portions of the body on which it would be impossible to direct the descending douches. Such are the arm-pit and the perinæum, on which latter this method is often employed in cases of disease of the bladder, enlargement of prostate, chronic urethritis, etc. Finally, the douche is also used internally in certain affections, catarrh of the uterus, for example. The apparatus is then arranged in a particular manner; the diameter of the column of water is less than in the preceding cases, and its action is continued only during a few minutes. Moreover, on whatever part the douche is carried, it is always well that the invalid should be wrapped in a woolen *peignoir*, in order to protect him from being chilled either by contact with the air or by the splashing of the water.

The douche administered with precaution constitutes one of the most energetic methods against a host of local affections; taken on the entire surface of the body, it is a sudorific more powerful than the baths. The percussion and shock that it occasions diffuse themselves into the depth of the tissues, change the method of vitality, and awake a new activity which is transmitted to the internal organs and give rise to favorable reactions. Whenever one wishes to stimulate vital action at a particular

point, or to cause a chronic inflammation to pass into an acute state, one is certain to obtain the effect by directing the douche on the part indicated. We have recourse to it with success in *atony, and in partial laxity in incomplete anchylosis, in contractions of the limbs, gêne, stiffness of the joints, chronic rheumatism, sciatica, lumbago, weakness and local paralysis, indolent swellings, white tumors without inflammatory complications, and circumscribed and rebellious eruptions.* The douche is employed with a very fine jet in eruptions on the face, and in chronic inflammation of the eyelids. It is directed on the spine in paralysis of the limbs and in diseases of the genital organs, and chiefly in general debility, the exhaustion which follows vicious habits or the excess of certain pleasures. In this last case the douche often restores vigor dissipated before manhood. Directed on the loins, the hypogastrium, the thighs, and the perinæum, it is one of the most powerful means of reëstablishing either the menstrual or the hemorrhoidal flow.

The effect of a douche depends greatly upon the manner of administration, aided by friction, massage, and percussion. The difference is very perceptible between two douches unequally applied; in order to realize how much patience and skill can accomplish, it suffices to recall the effects that a bone-setter obtains by blind but prolonged manipulation of an articular surface. Massage, to which we attach great value, produces at will warmth and fluxion, even to the extent of overcoming the impression of shock and pain; it keeps up perhaps an exchange of electricity, a magnetic action; we know with what facility the touch of the hand or rubbing relieves pain, cramp, etc., etc. Massage would always be applied if it did not fatigue the doucheur, who often contents himself with striking with the palm of the hand, producing a "tic-tac" well known in the vicinity of the baths. This gives a painful concussion, a disagreeable sensation, and is good only for indolent affections like *anchylosis, paralysis, and old tumors,* where one desires to awaken the functions of the skin, or to produce a revulsion; it is injurious in acute conditions.

Friction should be applied, not under the jet, but all around it, in order to weaken neither the shock nor the warmth; it is begun

softly and gently near the diseased point on the parts where it is desirable to increase the activity of the circulation, and it reaches only by degrees the seat of the evil, when it is accessible; it causes pain if it is not managed tenderly. At Aix, where everything is well done, the doucheurs often rub the sensitive part with the fore-arm.

The warm douche stimulates the skin and gives the greatest energy to the circulation; it provokes perspiration, and consequently a sedative result proportionate to the loss experienced. Nothing is more appropriate to reduce congestion, to direct fluxion, and in one word to realize derivative medication.

The temperature of the douche is from 104 to 112 or 117° (Fahr.); it is seldom higher except for vigorous men, not excitable, not subject to palpitations or congestion, and who perspire without detriment. The warm jet would be painful or dangerous for weak persons, for whom we prefer the douche without vapor.

The bathers at Allevard are in a semi-recumbent position on an inclined plane when receiving the douche; this position is the best for relaxing the muscles, for changing the postures, and for yielding the body to the requirements of the douche; a seat, as at Aix, is preferable when a vertical position is desired.

Those who take the douche experience sometimes a lassitude which disposes them to sleep, at other times a nervous disturbance somewhat distressing; they retain during the day a susceptibility which makes them sensitive; they should clothe themselves warmly, retire early, and seek from the repose of the night the completeness of the medication.

If after the douche violent exercise is taken, it is not the skin alone which is excited, but the entire organism, and this general disturbance may easily favor the congestion which it has been necessary to divert.

The greatest attention is required in ordering a series of douches; the first is well borne when it is weak, but, however warm, it reduces strength for several days; it is well to begin with little heat and to watch carefully the effect of the first douche before prescribing the second; one moderates or suppresses the

heat when the invalid is inconvenienced; it is possible to increase the power of the jet, and to protect the head by keeping the feet on a warm brick, or in a foot-bath. A powerful jet permits a little less heat than a weak one. The sensation and the effect depend upon the impulsive force determined by the fall and the volume of the liquid; a violent shock or a jet too warm irritates and causes congestion; both should be in proportion to the strength of the invalid.

The douche which strengthens when it is moderated is not always practicable with children; we meet certain indications which it is necessary to respect. We abstain if there is fever; an invalid oppressed, weakened, or emaciated would not bear abundant perspiration; with irritable women the douche would awaken the normal state or palpitations; sometimes it is expedient to avoid the lumbar region; every precaution is recommended in the case of young persons disposed to *phthisis*, or showing a great sensitiveness. These precautions are no less useful for those of advanced age. In restoring the circulation and the life of the skin, the general douche diverts fluxion, it aids resolution of the lymphatic glands, of *arthritis*, of *rheumatism*, of *chronic diseases not affecting the heart.* In *asthenia* and in *angina* the jet may be directed on the neck, the spine, the shoulders; it is delivered on the seat of the disease when indolent; it is always necessary to keep it away from the liver, the heart, the breast, the abdomen, from all the points which are tender; in one word, from all the anterior part of the body. The douche is dangerous when tuberculization is imminent; in all cases massage and friction may be practiced on all the surfaces.

As long as the acute state continues it is well to carry the douche somewhat away from the suffering part; but if the disease becomes chronic it is advantageous to stimulate the seat of it or to render active the subcutaneous circulation. We expect from the douche direct stimulation or revulsion; the first in lymphatic congestion of the cellular tissue, and of the skin, of the joints, of the glands, and more rarely of the abdominal viscera; the second when we wish to recall the blood to the extremities.

In order to obtain the best results from a douche there are

certain precautions which should not be neglected by the physician. To be fasting and without fever, to precede by a bath, to ascertain that the room is not cold, and is not too warm, that there is a sufficiency of air, that the liquid is of the prescribed degree; to graduate the volume and force of the jet, to direct it at first upon the feet and to concentrate there most of the heat, to reduce it in going toward the trunk and the head, and to vary its direction, to aid it by friction, massage, and percussion, to use the water freely on the inferior members; to cause one to be dried promptly with warm linen, covered with flannel, taking care not to load the superior parts and to cause a rush of blood to the head, to uncover the head, to leave the head and neck a little free in order to carry to the lower members a movement of perspiration, to sweat a half hour more or less, according to indication, and to sleep if possible; to lighten little by little the wraps, to uncover slowly, to dress, and to pass gradually to the exterior air. It is seldom useful to provoke abundant sweats, which many bathers expect, and of which the benefit is at least uncertain; it should be remarked that the part which has been douched retains the heat during the entire day.

For those who are not willing to go to bed, who do not need sweating or do not wish to submit to it, we can (not always) finish the douche by a cold jet which produces reaction; then we cannot depend upon the complete effect of an ordinary douche.

In the local douche we make with impunity a jet of 112° to 118° (Fahr.) fall on the hands and feet of *asthmatics*, of those suffering from *catarrh*, of irritable perrsons; it is applied thus for *chronic rheumatic swellings of the joints*, *white tumors*, *contractions*, *bronchitis*, *aphonia*, *angina*, even for those persons attacked with hypertrophy of the heart, who cannot breathe in a sweating room on account of the oppression which results, with an excessive loss of strength without profit.

The douche excites the local perspiration without causing congestion either of the chest or the head; it relieves a distressing difficulty very common in diseases of the respiratory organs — *cold in the extremities;* there is no method more certain to warm the feet, to rouse the circulation of the subcutaneous capillaries

in *œdema* by *hydræmia*, in *asthma* and *catarrh*, *chlorosis*, *cephalalgia*, *chronic affections of the throat or larynx*, which require revulsion, in *neuralgic*, and *nervous diseases* which often hinder calorification. We have seen the feet retain for two days the heat provoked by the local application of the douche with massage.

The "DOUCHE ÉCOSSAISE," in which are used alternately the cold jet and the hot jet, permits one to graduate and to increase the temperature and the force of the water, to vary and to prolong the applications, and to make them tolerable; the alternation of the jets gives tone otherwise than the ordinary douche; it renders active without effort the circulatory movement; it increases the resistance of the skin and leaves no fatigue; the two effects serve to moderate each other, to give mutual support; thus the DOUCHE ÉCOSSAISE is a sort of medium which has neither the entire action of the cold nor of the hot douche; we cannot use it for all subjects or for all diseases.

The bath is an adjuvant to the douche when it is desirable to give the medication all its energy. Often it is the douche which precedes the bath; I prefer an inverse order. In giving the douche in the first place it is said that the excitement of the skin is calmed in the bath, but it is precisely this excitement that one looks for and experiences during an hour at least of sweating.

[*From "Curative Effects of Baths and Waters," by Dr. Julius Braun.*]

The *local effect* produced is the main object of the *cold douche*. It is effected partly by a mechanical action like to kneading, and partly by the stimulant of cold and its reaction; it produces, after the cessation of the immediate effect, a hyperæmia of the capillaries, which may amount to inflammation, and subsequently a more lively circulation, retrogressive tissue-change, absorption, and formation of new matter. Varices, telangiectases, transudations in the subcutaneous cellular tissue, cold abscesses, atonic ulcers of the foot and leg, white swelling, and similar torpid exudations and growths in and about the joints,—these are the most important indications for the use of the local cold douche.

The *warm douche* is a milder form; the mechanical effect is about the same, but its result is greater, because the superficial parts of the body offer less resistance in the heat to the process of shampooing; the withdrawal of heat is wanting, and consequently all reaction, and the whole process has predominantly the character of kneading. The final effect consists in a more passive stasis, when the water applied is above the temperature of the blood, and in a greater action of the parts influenced by the douche when the heat was more moderate. The remedy is adapted to the same class of cases as the cold douche, and should be used in those cases where there is reason for sparing the sick person the work of the reaction.

The *mixed* or *Scottish douche* consists in the frequently repeated alternation of cold and warm jets, and this form deserves the preference in a great number of cases. It is the safest form, because it effects in a physical manner the reaction which, under any circumstances, is required from the organism in the cold douche; and it altogether closely adheres to the principle of organic life which consists in the alternation of the phases of stimulation and contra-stimulation, of excitement and repose, and of cold and heat. The remedy is much neglected, and is quite unknown to many, although its reasonableness is supported by the successful experiments of Lebert, who found it extremely efficacious in spinal paralysis.

[*From the "Medical News," Philadelphia, May 7, 1887.*]

SULPHURETTED HYDROGEN INHALATIONS AS A METHOD OF TREATMENT FOR PULMONARY TUBERCULOSIS.

BY ARTHUR C. HUGENSCHMIDT, M. D., OF PARIS, FRANCE.

THE subject of the treatment of pulmonary tuberculosis by means of sulphuretted hydrogen has attracted so much attention for past weeks, that it may not be without interest to describe the employment of this gas by another method which during the many years it has been used, has given very satisfactory results. This method has added to its interest this factor, that while the treatment of phthisis by enemata shows, strange to say, no diminution in the number of tubercle bacilli contained in

the sputa, and even, in some cases, an increase in quantity is said to have been observed, in this method, after a few days' treatment, the microörganisms are found to have greatly decreased in number, and, in some cases, totally disappeared.

The observations we shall describe have been made by Dr. B. Niepce, physician in chief at the mineral springs of Allevard, France, who, for a period of thirty-two years, has been enabled to observe the beneficial influence of the inhalation of the gases contained in the sulphurous water in the treatment of affections of the respiratory passages, having obtained, in many cases, cures of phthisis of the first stage, and even second stage, with a notable amelioration of the distressing symptoms of the last stage.

The inhalations as administered at Allevard are given as follows: The patients are placed in a spacious room, which is about twenty-one feet long, eighteen feet wide, and eighteen feet high, with very large windows, to allow a rapid ventilation after the inhalations are over. In the center of the room there is a jet of the mineral water, which, striking a concave plate placed six feet above the lower reservoir, causes the jet to separate and divide itself into many drops, which liberates the gases contained in the water. The gases and their quantity contained in a litre of the mineral water are:

Sulphuretted hydrogen gas	24.75 c. cm.
Carbonic acid	97.00 c. cm.
Nitrogen	4.00 c. cm.

The cures of phthisis which had been obtained by Dr. Niepce during his long practice he could only attribute to the beneficial influence of the mineral water producing a salutary modification of the organism, but further explanations could not be given.

In 1883, however, he began his observations as to the influence of the inhalations upon the presence of the tubercle bacilli; and, to his surprise, found that, after a few days' treatment, in patients of the first and second stages of the disease, there was a great diminution in number, even sometimes complete disappearance.

He then undertook a long series of experiments, of which the following are the principal.

1st. Having ascertained the presence of bacilli in a sputum, he inoculated two rabbits and guinea-pigs with it. One month later they were all tuberculous.

2d. He left, for twenty minutes, in the atmosphere of the inhalation-room, a portion of the same sputum, which he then directly inoculated in rabbits and guinea-pigs; three months later, at the autopsy, no signs of tuberculosis could be discovered; these observations, repeated several times, gave negative results.

In the third experiment he took four mice, which were inoculated with portions of sputum containing bacilli; two of them were placed in the inhaling-rooms, the others left outside. Six weeks later, at the autopsy, the ones exposed to the inhalations of the gases were found free from tubercle; the other two, on the contrary, being absolutely filled with tubercular nodules.

Such satisfactory results led Dr. Niepce to experiment with inhalations of sulphuretted hydrogen alone, with equally good results.

1st. Two rabbits and two guinea-pigs were inoculated. On the twentieth day the two guinea-pigs were sick, and on the forty-fifth day the autopsy revealed extensive tuberculosis. The two rabbits, however, which had been inoculated with the same material, but which had been submitted for three weeks, three times a day for half an hour, to the inhalations of sulphuretted hydrogen alone, were absolutely normal at the autopsy.

2d. Sputum which had been exposed for ten minutes to an atmosphere containing three per cent. of sulphuretted hydrogen, was inoculated in rabbits, the organs of which were found normal three months later. This same sputum, which had not been exposed to the vapors, produced the disease in every animal inoculated with it.

3d. A patient in the second stage of the disease was submitted four times a day, for a period of fifteen minutes, to inhalations of an atmosphere containing three per cent. of sulphuretted hydrogen. On the twelfth day the number of bacilli had greatly diminished, and on the twenty-seventh day, when the cutaneous surface and sweat had an odor of sulphur, and the sputum contained sulphide of sodium, this sputum was inoculated in guinea-pigs, with negative results, no tuberculosis being produced; showing evidently that the bacillus or septic poison had lost its virulence.

To approximate the method of administration of this gas as nearly as possible to the one established by him at Allevard, he employed a reservoir made of zinc (that metal not being acted upon by the gas), the capacity of which was fifty litres; he dissolved twenty-seven cubic centimetres of sulphuretted hydrogen in each litre of water. The vessel being then filled with this water containing the gas in solution was placed at a height of about ten feet, and an opening half an inch in diameter at the bottom of this reservoir allowed the water to come out as a small stream into a zinc vessel placed beneath it, the gas being so set free. The patients are directed to inhale four times a day, fifteen minutes at a time, and continue such treatment for several weeks, when the inhalations are suspended for some time, and then again resumed.

Dr. Niepce had already expressed the results of his experiments in a paper presented before the Académie de Médecine, in January, 1884, in which he concluded that the "inhalations of pure sulphuretted hydrogen, employed as a therapeutical agent, modify, and sometimes cure, pulmonary tuberculosis." His experiments were confirmed by Professors Cavalier and Mairet, of the Faculty of Montpellier; also by a recent graduate, Dr. Pilatte, who undertook researches on the relative power of the different antiseptics known, as regards their action on the tubercle bacillus, and reached the conclusion that, "of all the antiseptics employed, sulphuretted hydrogen was the most reliable, preventing the development of the bacillus, at the same time destroying this microörganism."

Such satisfactory results have been obtained from the employment of sulphuretted hydrogen brought into direct contact with the lung tissue, as to warrant further and extensive experiments in that respect, which will certainly prove most interesting.

The combined use of these two methods — namely, enemeta and inhalations — may prove to be of the greatest benefit, for one might replace the deficiency of the other, when acting at the same time. For instance, the gas, when given by enemeta, seems to have lost, when exhaled by the lungs, that special power of destruction of the tubercle bacillus which it possesses when brought in direct contact with it; for we know the number of bacilli remains the same, or even increases under such treatment. It would be interesting to know if the sputum, after the patient has been subjected to the enemeta treatment for several weeks, is capable, when inoculated in animals, of producing the disease. If so, sulphuretted hydrogen inhalations, by destroying the bacillus, and preventing its development by direct action upon it, will certainly be a most valuable adjunct to the new treatment.